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10/502,022

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James D. Talton

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EXAMINER

MILLER, JR, JOSEPH ALBERT

ART UNIT

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1792

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/502,022	Applicant(s) TALTON, JAMES D.	
	Examiner JOSEPH MILLER JR	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/22/2007, 07/21/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-17 and 19, drawn to process.

Group II, claim 18, drawn to product.

Group III, claim 20, drawn to apparatus.

The inventions listed as Groups I - III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature, directing the ablated target material with a gas flow is taught in US Patent 6,177,151.

During a telephone conversation with Mr. Mike McGurk on December 17, 2008 a provisional election was made without traverse to prosecute the invention of process, claims 1-17 and 19. Affirmation of this election must be made by applicant in replying to

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this Office action. Claims 18 and 20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Claim Observations

Instant claim 1 is written broadly such that any physical vapor deposition process which uses a gas teaches the limitations. Physical vapor deposition inherently and/or obviously involves ablation. Additionally, claim 1 may be taught by a chemical vapor deposition process wherein a material is sublimated or even evaporated (from the surface of the target/source material). There is no requirement in instant claim that the target material even be a solid material.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 5, 7, 9-12, 17 and 19 are rejected under 35 U.S.C. 102(b) as anticipated by Lee (5,543,019).

Lee teaches the use of sputtering to deposit material on a medical device (abstract). The material in the sputtering process is ablated from a target by using a noble gas introduced into the chamber (abstract).

Regarding claim 2, Lee teaches a pressure of 0.5 Torr (col 4, lines 20-23) which is about 1 Torr.

Regarding claims 4 and 5, Lee teaches a gas flow rate of 10 - 100 sccm (col 4, lines 12-15).

Regarding claim 7, Lee teaches the use of RF power, thereby teaching the use of a high energy source (col 4, lines 23-25). It is noted that claim does not define the metes and bounds that limit "high energy".

Regarding claims 9-11, Lee teaches a film thickness of 0.1 to 3 microns (col 4, line 45).

Regarding claim 12, Lee teaches the coating may be used on an implant (col 3, lines 16-20).

Regarding claim 17, Lee teaches a gas flow of 10 -100 sccm which is directed towards the targets and therefore inherently away from the substrate (see Figure 1). The velocity of the gas flow to create the ablation of material from the target would necessarily decrease the rate of the deposition on the substrate.

Regarding claim 19, Lee teaches all elements of instant claim as described above. Regarding directing the material toward the substrate with a gas flow, the gas

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flow is used to ablate the material, therefore regardless of the direction of the flow of the gas, the gas flow is being used to direct material towards the substrate with the gas flow. This may be viewed in two ways in this light, first being that the gas flow ablates the material and in the process directs the material from the target and towards the substrate; secondly, there is inherently going to be some rebound of gas particles after striking the target and therefore this resulting flow would direct the ablated material towards the substrate.

Claims 1, 2, 6-11, 15, 16 and 19 are rejected under 35 U.S.C. 102(b) as anticipated by Talton (WO00/28969).

Talton teaches the use of PVD to coat a polymer onto the surface of a substrate, wherein PVD may be by means of evaporation, sputtering or laser ablation of a target material (section 2.1, 1st paragraph). Talton teaches the use of a coating vapor (section 2.1, lines 24-26). Because the actual coating process is a physical vapor deposition, it is inherent that the vapor described is either supplied or created in the process of ablation and therefore would be considered a gas flow that directs the ablated target material to the substrate. Talton further describes the existence of the gas, particularly in the laser processes on page 4, lines 23-29.

Regarding claim 2, the pressure may be from mTorr range up to 10 Torr (page 20, lines 15-18).

Regarding claim 6, Talton teaches the use of polysaccharides, etc, as target materials (section 2.5, page 18, line 29- page 19 line 4).

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Regarding claims 7 and 8, Talton teaches the use of an excimer laser to ablate the target material (page 7, lines 10-14).

Regarding claims 9-11, Talton teaches the deposition of layers from about 5 to about 1000nm (page 9, lines 3-8).

Regarding claims 15 and 16, Talton teaches the application of continuous or discontinuous coatings (section 2.0, page 2, lines 30-32).

Regarding claim 19, Talton teaches all aspects of the instant claim, as noted above.

Claims 1-3, 6-12, 14 and 19 are rejected under 35 U.S.C. 102(e) as anticipated by Chrisey (6,177,151).

Chrisey teaches a method of transferring material onto a receiving substrate (abstract). Chrisey teaches a transfer material (target), a substrate, and a source of pulsed laser energy (abstract). Chrisey teaches examples where a laser is used to ablate material from a target to a substrate (examples 1-4, cols 11 and 12). Chrisey teaches that the matrix that is used to support the material may include a material that vaporizes into gas and acts as a propellant to guide the target/ablated material onto the substrate (col 7, lines 50-58).

Regarding claims 2 and 3, Chrisey teaches the use of atmospheric pressure which is 760 and therefore greater than 1 Torr (col 3, lines 20-24).

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Regarding claim 6, Chrisey teaches the use of chemoselective polymers (col 5, lines 39-65).

Regarding claims 7 and 8, Chrisey teaches the use of a pulsed excimer laser (col 9, line 60- col 10, line 17).

Regarding claims 9 -11, Chrisey teaches a deposit material coating as thin as 1 micron (col 3, lines 26-29). As instant claim is written, it is open to interpretation as the substrate thickness.

Regarding claim 12, Chrisey teaches the application of coatings to gas sensors (col 6, lines 6-19) and may be a biological sensor (col 5 lines 38-45).

Regarding claim 14, Chrisey teaches the use of electronic devices including a coating material which could be an electrically conducting organic polymer (col 5, lines 32-38), inherently teaching a conducting polymer sensor.

Regarding claim 19, Chrisey teaches all elements of instant claim, as encompassed within claims above.

Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as anticipated by Marsh (6,143,085).

Marsh teaches a method of using a laser to ablate material use for a deposition process (abstract). Marsh teaches the use of a laser to ablate material from a target (col 7, lines 1-45) which is carried by a carrier gas and deposited on a substrate.

Regarding claim 7, Marsh teaches the use of a laser to vaporize the material.

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Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by Gillery (4,610,771).

Gillery teaches a sputtering method where a substrate is placed in a chamber with a target and a gas is supplied to sputter material which is directed to the substrate from the target (col 4, lines 41-51).

As instant claim reads, using a gas flow to ablate materials is sufficient to direct an ablated target material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 15 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, 35 U.S.C. 103(a) as obvious over Chrisey (6,177,151) as applied to claim 1 above.

Chrisey teaches a method of transferring material onto a receiving substrate (abstract). Chrisey teaches a transfer material (target), a substrate, and a source of pulsed laser energy (abstract). Chrisey teaches examples where a laser is used to ablate material from a target to a substrate (examples 1-4, cols 11 and 12). Chrisey teaches that the matrix that is used to support the material may include a material that vaporizes into gas and acts as a propellant to guide the target/ablated material onto the substrate (col 7, lines 50-58).

Chrisey teaches that a pattern can be created with the coating (col 3, lines 12-15). Chrisey teaches further that the laser can be directed to move the location of deposition onto the receiving substrate (col 10, lines 44-67). Chrisey teaches the re-direction of the laser in a manner where the locations **may** overlap. It is inherent and/or obvious that the locations are not required to overlap and therefore the deposition may be discontinuous or continuous.

Claims 4 is rejected under 35 U.S.C. 103(a) as unpatentable over Marsh (6,143,085).

Marsh teaches a method of using a laser to ablate material use for a deposition process (abstract). Marsh teaches the use of a laser to ablate material from a target

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material (col 7, lines 1-45) which is then carried by a carrier gas and deposited on a substrate.

Marsh is silent on the gas flow rate of the carrier gas, but teaches variation of the laser power to control the throughput of material vaporization (col 7, lines 5-25); it would have been obvious to someone of ordinary skill in the art at the time of the invention to set a carrier gas flow at a rate sufficient to produce a desired thickness in a desired amount of time (i.e. control deposition rate) in a manner that still allows required uniformity (in order to sufficiently utilize the ablated material).

Claim 13 is rejected under 35 U.S.C. 103(a) as unpatentable over Lee (5,543,019) in view of claim 12 above.

Lee teaches the use of sputtering to deposit material on a medical device (abstract). The material in the sputtering process is ablated from a target by using a noble gas introduced into the chamber (abstract).

Lee teaches the coating may be used on an implant (col 3, lines 16-20) but does not specifically teach the substrates in claim 13. It would have been obvious to someone of ordinary skill in the art at the time of the invention to use an ocular, oral, or hip implants as substrates based on the teaching of Lee to use implants as substrates and the fact that ocular, oral and hip implants are well known types of implants.

Claim 17 is rejected under 35 U.S.C. 103(a) as unpatentable over Talton (WO00/28969) in view of claim 1 above.

Talton teaches the use of PVD to coat a polymer onto the surface of a substrate, wherein PVD may be by means of evaporation, sputtering or laser ablation of a target material (section 2.1, 1st paragraph). Talton teaches the use of a coating vapor (section 2.1, lines 24-26). Because the actual coating process is a physical vapor deposition, it is inherent that the vapor described is either supplied or created in the process of ablation and therefore would be considered a gas flow that directs the ablated target material to the substrate. Talton further describes the existence of the gas, particularly in the laser processes on page 4, lines 23-29.

Talton teaches that a gas flow may be used to "control the extent of coating thickness" onto the substrate (page 3, lines 27-32). Talton teaches that the gas flow may be used to "prevent agglomeration" which teaches that the rate of deposition (at least in one area) is being decreased and therefore implies a gas flow away from the substrate (or at least some part of the substrate). Talton further teaches using air flow through the particles to agitate them to ensure proper coating, it would have been obvious to someone of ordinary skill in the art at the time of the invention that the air flow would be opposite the direction of the coating material in order to cause desired mixing of the particles would necessarily result in a flow that decreases the deposition rate (section 2.6, page 19, lines 25-30).

Though Talton teaches the contra-gas flow, he is silent on the gas flow rate. It would have been obvious to someone of ordinary skill in the art at the time of the invention to vary the gas flow rate sufficiently within the realm of process optimization to properly coat the particles. It is obvious that one would want the mixing effect and

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avoidance of agglomeration desired by Talton but the flow would need to be low enough to sufficiently to sufficiently produce a coating on the particles.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH MILLER JR whose telephone number is (571) 270-5825. The examiner can normally be reached on Monday through Thursday from 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/JOSEPH MILLER JR/
Examiner, Art Unit 1792

/Timothy H Meeks/
Supervisory Patent Examiner, Art Unit 1792